

II. REMARKS

Reconsideration and allowance of the subject application are respectfully requested.

Claims 1-5, 7-22 and 28-31 are pending, with Claims 1, 28, and 30 being independent.

Claim Rejection – 35 U.S.C. §103

Claims 1-3, 7-9, 14-21, and 28-31 are rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent No. 6,222,166 to Lin, et al. (hereinafter “Lin, et al.”) in view of United States Patent No. 5,641,421 to Manov, et al. (hereinafter “Manov, et al.”) and United States Patent No. 4,817,419 to Iden (hereinafter “Iden”). Claim 4 is rejected under 35 U.S.C. §103(a) as being unpatentable over Lin, et al. in view of Manov, et al. and Iden and further in view of United States Patent No. 5,320,513 to Schmidt (hereinafter “Schmidt”). Claim 22 is rejected under 35 U.S.C. §103(a) as being unpatentable over Lin, et al. in view of Manov, et al. and Iden and further in view of United States Patent No. 5,702,853 to Riley (hereinafter “Riley”). Claim 5 is rejected under 35 U.S.C. §103(a) as being unpatentable over Lin, et al. in view of Manov, et al. and Iden and further in view of United States Patent No. 5,521,576 to Collins (hereinafter “Collins”). Claims 10-12 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lin, et al. in view of Manov, et al. and Iden and further in view of United States Patent No. 4,787,836 to Osuna-Diaz, et al. (hereinafter “Osuna-Diaz, et al.”). Claim 13 is rejected under 35 U.S.C. §103(a) as being unpatentable over Lin, et al. in view of Manov, et al. and Iden and further

in view of Schmidt and European Patent No. 0963829 A1 to Goldwin (hereinafter "Goldwin"). Applicants respectfully traverse all art rejections.

Prior Art Reference "Teaches Away" from the Claimed Invention

"A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." M.P.E.P. §2141.02, citing, W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). In W.L. Gore & Associates, Inc. v. Garlock, Inc., the claims at issue were directed to a process that required stretching PTFE rapidly. However and significantly, the prior art teaching with regard to unsintered PTFE indicated that the material does not respond to conventional plastics processing, and the material should be stretched slowly. Id. (emphasis added). The Federal Circuit went on to reason that the cited prior art taught away (i.e., slowly as opposed to rapidly) from the invention. Id.

Similarly, in the subject application, the independent claims recite a "thermally conductive non-flat substrate surface [having] a thermal coefficient of expansion substantially the same or slightly lower than the dielectric and resistive layers." (See, for example, page 13, lines 5-98 of the specification). However, the cited reference, Lin, et al., teaches and claims a substrate having a thermal coefficient of expansion higher than the thick film. (See Summary of the Invention, Col. 3, Lines 5-14, etc.). Lin, et al. teaches or leads away (i.e., a thermal coefficient of expansion higher as opposed to the same or slightly lower) from the claimed invention. For the holding in W.L. Gore & Associates, Inc. v. Garlock, Inc. and as codified in M.P.E.P. §2141.02, reconsideration is respectfully requested.

Expectation of Success is Lacking

For an obviousness rejection, M.P.E.P. §2143 requires that there must be a reasonable expectation of success. Lin, et al. teaches that the substrate should have a high thermal coefficient of expansion, such as with aluminum. (Col. 4, Lines 33-40). Lin, et al. teaches that in the preferred embodiment, the substrate is made of aluminum or an aluminum alloy. (Col. 4, Lines 40-44). Further, Lin, et al. teaches that aluminum has a melting point of 600 degrees C thus firing should be below 600 degrees C or specifically 580 degrees C. (Col. 5, Lines 28-34).

In stark contrast, Applicants preferred embodiment is fired at 800 - 825 degrees C, which is well beyond the melting point of aluminum and the recommended firing taught in Lin, et al. (Page 15, Lines 10-19). If the teachings of Lin, et al. were applied to the Applicants' claimed invention, there would be no reasonable expectation of success. Reconsideration is respectfully requested.

Combination of References is Improper – Part 1

The Examiner has improperly relied on non-analogous prior art reference in his obviousness analysis and conclusion. "In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." M.P.E.P. §2141.01(a), citing, In re Oetiker, 977 F.2d 1443 (Fed. Cir. 1992).

For example, in Wang Laboratories, Inc. v. Toshiba Corp., 993 F.2d 858 (Fed. Cir. 1993), the patent claims at issue were directed to single in-line memory modules (SIMMs) for installation on a printed circuit motherboard for use in personal computers, and

used for dynamic random-access-memories. Id. The Examiner cited a reference to SIMMs developed for use in large industrial machine controllers and only taught the use of static random-access-memories or read-only-memories. Id. Significantly, the Federal Circuit found that the cited prior art reference was in a different field of endeavor because it involved memory circuits in which modules of varying sizes may be added or replaced, whereas the claimed invention involved compact modular memories. Id. The Federal Circuit went on to hold that the cited reference was non-analogous to the claims at issue. Id. It is very important to note that the cited reference and the claims at issue dealt with SIMMs, but the Federal Circuit still held that the cited reference was non-analogous to the claims at issue.

Similarly, in the above-identified patent application, the claims at issue require “resistive layer applied on said dielectric layer thereby forming a circuit for the generation of heat, the resistive layer having at least one resistive trace made of thick film ink in a pattern that is discontinuous circumferentially.” (Claim 1 and similar language in the other independent claims). As explained in the specification, the resistive trace (i.e., the resistive layer of thick film ink formed as a circuit) is fired at 800 degrees C. Moreover, the trace was designed to produce a temperature profile for processing molten material in a hot runner system. (Page 19, Lines 1-11). It is generally known by those having ordinary skill in the art that to maintain molten material in a hot runner system requires an operating temperature of the nozzle at 425 degrees C.

The Examiner has cited Manov, et al. for the proposition that “Manov teaches [sic] the creation of a trace pattern on a heater that is discontinuous circumferentially on the heater body . . .” (Office Action, Page 3, Third Paragraph). Manov, et al. reads, in pertinent part, “[t]his invention relates to electrical heater systems, and more particularly to such

systems in which the heating elements are thin ribbons of amorphous metallic alloys that are operated at low and moderate temperatures. (Col. 1, Lines 7-10). Indeed, the claims of Manov, et al. reflect this temperature limitation by claiming a maximum temperature of “below about 300 degrees Celsius.” (Claim 2). The reason for the restriction on temperature is explained in Manov, et al. as: “if an amorphous metallic ribbon is operated at a high temperature, it not only can become brittle, it can become crystalline. The heater characteristics drastically change with such a change in structure. Amorphous materials start to become brittle and then crystalline at temperatures in the low hundreds of degrees C, and consequently amorphous materials are just not the stuff of which heating elements are traditionally made.” (Col. 5, Lines 46-53). Manov, et al. stated that it “is an object of our invention to provide an electric heater that can be operated at relatively modest temperatures.” (Col. 5, Lines 54-55). Manov, et al. teaches that the amorphous metallic alloys may be applied to hair dryers, stove burners, space heaters, water heaters, and the like.

The present case is similar to the facts in Wang Laboratories, Inc. v. Toshiba Corp.; however, the devices in the present case are more distinct from each other. Here, the claims at issue are to a thick film ink trace and the cited reference teaches a thin ribbon made of amorphous metallic alloy. In Wang Laboratories, Inc. v. Toshiba Corp. they were dealing with SIMMs. In Wang Laboratories, Inc. v. Toshiba Corp., the Federal Circuit stated that the prior art reference was non-analogous to the claims at issue because the claims were to SIMMs installed on printed circuit motherboards for use in personal computers, and used for dynamic random-access-memories, whereas the cited reference disclosed SIMMs developed for use in large industrial machine controllers and only taught the use of static random-access-memories or read-only-memories.

Here, the claims at issue and the teaching of the cited prior art reference are even more distinct from each other than the SIMMs in Wang Laboratories, Inc. v. Toshiba Corp. Further, the amorphous metallic ribbon in Manov, et al. operates at temperatures significantly lower than the Applicants' claimed resistive trace made from thick film. Manov, et al. teaches applying the amorphous metallic ribbon to hair dryers, stove burners, space heaters, water heaters, and the like, whereas the claimed invention is used on hot runner systems. Recalling that the Federal Circuit noted that the SIMMs in Wang Laboratories, Inc. v. Toshiba Corp. were used in different devices (e.g., personal computers as opposed to industrial machines) and, thus, found that the cited reference was non-analogous to the claims at issue. Reconsideration is respectfully requested.

Combination of References is Improper – Part 2

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination (emphasis added). In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. ACS Hospital Systems, Inc. v. Monteffiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). Accordingly, even if all elements of a claim are disclosed in various prior art references, the claimed invention taken as a whole cannot be said to be obvious without some reason given in the prior art why one of ordinary skill would have been prompted to combine the teachings of references to arrive at the claimed invention. In re Regel, 188 USPQ 132 (CCPA 1975). The Federal Circuit has noted that to “prevent the use of hindsight based on the invention to defeat patentability of the invention, this court

requires the examiner to show a motivation to combine the references that create the case of obviousness.” In re Rouffet, 149 F.3d 1350, 47 USPQ2d 1453 (Fed. Cir. 1998).

The above cited rules of law have been summarized in the Manual of Patent Examining Procedures. “First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings.” “Second, there must be a reasonable expectation of success.” Finally, the prior art reference (or references) must teach or suggest all the claim limitations. M.P.E.P. §2143.

The Examiner states that “it would have been obvious to one of ordinary skill in the art to modify Lin with a discontinuous [sic] circumferential design as taught by Manov for ease in manufacturing . . . ” (Office Action, Page 4, First Paragraph). Again quoting the Manual of Patent Examining Procedures, “[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.” M.P.E.P. §2143.01. It is inconceivable to see why someone having ordinary skill in the art would place an amorphous metallic ribbon that is rated for “low and moderate temperatures” on the high temperature device disclosed in Lin, et al. Lin, et al. points out a disadvantage in the prior art that is specifically taught by Manov, et al. (i.e., low operating temperatures). Specifically, Lin, et al. reads that “the glass will significantly loose [sic] its insulation resistance properties, so the heater is limited to temperatures below 300 degrees C.” (Col. 2, Lines 45-48). This is what Manov, et al. teaches and claims. Indeed, Manov, et al. claims “an operating temperature below about 300 degrees Celsius. (Claim 2).

In summary, the prior art does not suggest the desirability of the combination of Lin, et al. with Manov, et al. In contrast, the combination of these references are a

disadvantage as stated in the Background of the Art in Lin, et al., and, thus, there is no teaching, suggestion, or incentive supporting this combination.

Previous Responses

Applicants' previous Responses to Office Actions for the above-identified case, which have been considered but held not persuasive by the Examiner, are hereby incorporate by reference to preserve the right to use the contents of said Responses in an Appeal, if needed.

Summary

The benefits of the Applicants' device are described in the patent application. This is a unique combination not suggested by the references. In fact, combining at least Lin, et al. and Manov, et al. goes against their teaching and renders the resulting apparatus unusable or defective.

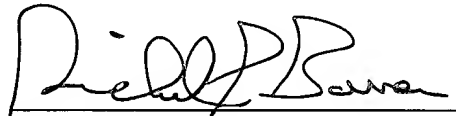
It is submitted that the combination of references is obtained only by hindsight reconstruction using Applicants' teachings. The Supreme Court of the United States cautioned against using hindsight in Graham et al. v. John Deere Company, 148 USPQ 459 (1966). Applicants respectfully submit that there has been no demonstration that the references are a prima facie showing of obviousness. As such, the rejections under 35 U.S.C. §103 are improper, reconsideration is requested, and withdrawal of the rejection is also respectfully requested.

Conclusion

In view of the amendments and remarks set forth above, Applicants submit that this application is in condition for allowance, and respectfully request prompt issuance of a notice thereof.

Applicants' undersigned agent may be reached by telephone at (202) 625-3500. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Richard P. Bauer", written over a horizontal line.

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